



**GE American
Communications**

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January 31, 1995

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**FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF SECRETARY**

Mr. William F. Caton, Acting Secretary
Federal Communications Commission
1919 M Street, N.W.
Washington, D.C. 20554

Re: Amendments of Parts 2 and 11 of the Commission's Rules to
Permit Use of Radio Frequencies Above 40 GHz for New Radio
Applications, Et Docket No. 94-124, RM-8308

Dear Mr. Caton:

Enclosed for filing in the above-referenced docket is one original and five copies of the opening comments of GE American Communications, Inc. Will you please date stamp one of these and return it to undersigned counsel.

Leave is requested to file these comments one day late. Unforseen and unanticipated delays in clearance prevented these comments from being filed until today. Because reply comments are at least thirty days away, a one-day delay will not prejudice other parties or delay the Commission's disposition of this matter.

Respectfully submitted,

Alexander P. Humphrey

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BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

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OFFICE OF SECRETARY

In the Matter of)
)
Amendments of Parts 2 and 11)
of the Commission's Rules)
to Permit Use of Radio)
Frequencies Above 40 GHz for)
New Radio Applications)

ET Docket No. 94-124
RM-8308

COMMENTS OF
GE AMERICAN COMMUNICATIONS, INC.

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GE American Communications, Inc. (GE Americom) hereby comments on the Notice of Proposed Rulemaking in the above-captioned matter,¹ which seeks to open for commercial development and use a portion of the frequency bands above 40 GHz. As a leading provider of satellite communications, with fourteen in-orbit satellites, GE Americom supports the Commission's action in this docket.

Opening new frequencies in the millimeter band for commercial use will help to alleviate already crowded existing spectrum. In order to resolve potential interference concerns in the 28 GHz Ka band that have prevented full use of this spectrum by satellite customers, the Commission should take the additional step of using this proceeding to allocate the 40.5-42.5 GHz portion of the new bands (hereinafter referred to as the 40 GHz band) to Local Multipoint Distribution Services (LMDS).

I. POTENTIAL INTERFERENCE EXISTS IN THE 28 GHZ BAND

Currently, the usable C-band and Ku-band FSS spectrum is

¹ Order FCC 94-273, 59 Fed. Reg. 66459 (1994) (Notice).

approaching saturation. GE Americom anticipates that there will be further applications in response to the Commission's announcement of a satellite processing round² for geostationary orbital positions in both the C and Ku-band frequencies. The overwhelming public interest in the use made of the C- and Ku-band frequencies makes it imperative that satellite operators utilize other FSS frequencies to satisfy the demonstrated public demand.

The diminishing amount of usable C and Ku-band frequencies occurs at a time when the need for additional FSS frequency bands is assuming major proportions. Satellite-based point-to-multipoint communications already play a major part in today's information infrastructure. Today's satellites transmit video and audio programming to thousands of cable head ends for distribution to millions of consumers and serve the communications needs of government, business, educational institutions and other entities. The role of satellites will become even more pivotal as the National Information Infrastructure (NII) and Global Information Infrastructure (GII) are deployed. Both the NII and GII will dramatically expand markets for information services.

Satellites must therefore have the use of the necessary frequencies to satisfy anticipated customer demands for broadband services capable of delivering the volumes of information services available using the NII and GII initiatives supported by

the Administration. Such services can be most optimally delivered by satellites operating in the 28 GHz band which has been globally allocated to such services. High-technology satellites can use this band to uplink and downlink broadband services to and from affordable ultra small-aperture satellite antennas (USATs).

In anticipation of this need for new services, the International Telecommunications Union (ITU) has allocated the 28 GHz to Ka-band satellite services. In order to test the utility of this band for satellite services and to seed the market for commercial use, NASA is currently conducting experiments in the Ka-band under its ACTS program. The results of this effort have been highly successful, thereby stimulating satellite operators to seek to operate commercial Ka-band services.

Initially, the Commission allowed a single LMDS operator to use the band.³ Although the Commission later did propose redesignation of the 28 GHz band to LMDS on a broader basis,⁴ it never completed this step, due to concerns as to whether the Ka-

³ Suite 12 is operating the limited services licensed in Hye Crest Management, 6 FCC Rcd 332 (1992). In addition, the Commission has granted experimental licenses to several proposed systems but, as far as GE Americom is aware, no systems other than the limited one operated by Suite 12 is in actual operation.

⁴ Rulemaking to Amend Part 1 and Part 21 of the Commission's Rules to Redesignate the 27.5-29.5 GHz Frequency Band and to Establish Rules and Policies for Local Multipoint Distribution Service, 8 FCC Rcd 557 (1993).

band could be shared on an interference-free basis by LMDS and satellite services.⁵

Accordingly, to address the issue of interference, the Commission appointed an advisory committee and convened a negotiated rulemaking proceeding to determine whether geostationary and low-earth orbit satellites and LMDS services could share the Ka-band without inflicting unacceptable interference on each other. If this were the case, the advisory committee was to propose means of ameliorating or eliminating this interference.

Despite many hours of analysis and hard work, and repeated efforts at accommodation, the advisory committee failed to come up with an acceptable method of sharing the Ka-band. GE Americom and other satellite operators continue to believe that satellites and LMDS cannot operate on a co-frequency basis without causing interference of such a magnitude as to doom both services.

Therefore, steps must be taken to make use of the Ka-band possible, breaking the standoff between satellite operators and LMDS interests, each of which has claimed the entire Ka-band. The opening of new millimeter frequencies in this proceeding presents a solution for immediate use of the Ka-band and rapid implementation of the new frequencies without the additional rulemaking proposed in the Second NPRM.

⁵ Second Notice in Rulemaking to Amend Part 1 and 21 of the Commission's Rules to Redesignate the 27.5-29.5 GHz Frequency Band and to Establish Rules and Policies for Local Multipoint Distribution Service, 9 FCC Rcd 1394 (1994) (Second NPRM).

The Commission can and indeed should eliminate interference in the Ka-band and moot the protracted and contentious proceedings involved in the Second NPRM by allocating the 40 GHz band to LMDS now. GE Americom believes LMDS is capable of using the 40 GHz band without detriment to the provision of LMDS. It is clear and that allocating the 40 GHz band to LMDS would simultaneously free up the 28 GHz band in the United States for FSS satellite use. The 28 GHz frequencies have already been allocated internationally by the ITU to FSS satellites, and other countries are beginning to deploy Ka-band satellite systems.

II. LMDS SHOULD BE ALLOCATED PRIMARY USE OF THE 40 GHZ BAND

It would be in the public interest for the Commission to use these proceedings to allocate the 40 GHz band on a primary basis to licensed LMDS operators under appropriate service rules now.

A. The Commission Should Not Reserve The 40 GHz Band for Some Future Undefined Use

The Commission should not adopt the tentative proposal in the Notice, which refrains from allocating the 40 GHz frequency band to a specific use.⁶ GE Americom respects the Commission's needs to preserve its flexibility and to encourage the free play of the market to develop services that consumers need. But to allocate the 40 GHz band to some future undefined future class of "Licensed Millimeter Wave Services" licensees would constitute an unwise step. It would delay implementation of the 40 GHz band for a protracted period.

⁶ Notice at ¶ 21.

If the Commission places its hopes on the possibility that some undefined future technologies will make use of the 40 GHz band, it will compromise needs in the 28 GHz band that have been demonstrated to exist today. Accordingly, it should prescribe rules appropriate to LMDS and allocate the 40 GHz band to this technology. Allocating the 40 GHz band to LMDS will permit an optimal and timely use of the new spectrum and the prompt implementation of LMDS in an interference-free band. With new spectrum free of interference, LMDS operators can roll out their services in the shortest possible period and begin to compete in the marketplace.

Allocating the 40 GHz band to LMDS will not preclude development of new technologies capable of using this band. There are some services today that can use frequency bands on a secondary basis or even on a co-primary basis, and there is no reason to conclude that imaginative new technology developers can not design their products so as to operate on an interference-free basis with LMDS at 40 GHz.

B. LMDS is Capable of Using the 40 GHz Band

To allocate the 40 GHz frequency band to licensed LMDS now is feasible. The Commission has observed in the Notice that the two gigahertz allocated within the 40 MHz band "will permit the development of short-range wireless radio systems with communications capacities that now are achievable only with coaxial and optical fiber cable."⁷ GE Americom's analysis is in

⁷ Notice at ¶ 2.

accord with this conclusion. This description fits LMDS, and the rules proposed by the Commission are modeled on those for LMDS, thus making them suitable for LMDS at 40 GHz.

The feasibility of the use of LMDS in the 40 GHz band is confirmed by the European experience. The European Radio Commission has studied the issue and has concluded that the 40.5-42.5 GHz band is the most suitable for Multipoint Video Distribution Systems (MVDS), which are the functional equivalent of LMDS.⁸

Compared to 28 GHz, propagation characteristics at 40 GHz are impacted slightly more by signal attenuation caused by atmospheric conditions and particularly by rain. But, given the short transmission paths of LMDS signals made possible by the cellular nature of this service, the difference in attenuation characteristics is not major. It is likely that, with inconsequential modifications to system designs, LMDS operators can adequately adjust to this situation. This is in comparison to the suboptimal use of the 40 GHz band for satellites, with their significantly longer earth-to-space and space-to-earth transmission paths through hundreds or thousands of miles through the atmosphere and power limitations on the part of small mobile satellites.

The need to retarget from 28 GHz to 40 GHz should have

⁸ Like LMDS, MVDS consists of a microwave transmitter connected to an omni-directional hub antenna, which is capable of delivering multi-channel video to a particular cell of subscribers' receivers.

little, if any, effect on LMDS operators, proposed operators, and equipment suppliers. As previously noted, all but one of the LMDS licenses has been experimental, and Suite 12's services have been deployed on a limited basis at best. The fact that LMDS has not been successfully exploited in the marketplace confirms the general impression that LMDS as a concept is still largely in the developmental stage. Accordingly, at this point the use of the 40 GHz rather than the 28 GHz frequency band should require relatively minor design and cost considerations, in contrast to the major loss of satellite services if LMDS is permitted to remain at 28 GHz.

C. Allocation of LMDS to 40 GHz Would Be Beneficial to Both LMDS Users and Satellite Users

GE Americom believes that allocating the 40 GHz frequency band to LMDS would lead to the expeditious offering of both LMDS and Ka-band satellite services. By thereby mootting the controversies over sharing the 28 GHz band between two fundamentally incompatible technologies, the Commission will be clearing the way for fuller use of both these bands in the strong public interest of making a broad variety of services available to consumers.

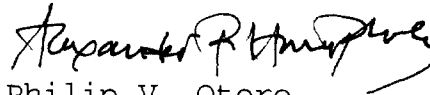
To date, unresolved questions about frequency sharing with LMDS have caused the Commission to hold in abeyance applications to use the 28 GHz band frequencies by Ka-band satellites. The Commission has equally declined to allocate the 28 GHz band to LMDS because of these same interference-related concerns.

Relocation of LMDS to the 40 GHz band will completely moot these

questions, allowing the Commission to act on outstanding applications by satellite operators to use the 28 GHz band. It will also entitle LMDS operators to file applications to use the 40 GHz band.

As noted above, compelling public interest considerations support the immediate deployment of Ka-band satellites as soon as possible. FSS satellites operating in the Ka-band promise to expand delivery of the FSS services that are part of daily life for virtually every citizen, as well as deliver the broadband services of the NII in the shortest possible amount of time. Assignment of the 28 GHz band to high-technology FSS satellites will also carry out the ITU assignment of this band, which will permit extension of the services enjoyed by American citizens to citizens of developed and developing countries and at the same time help insure continued United States leadership in satellite-delivered communications services.

Respectfully submitted,



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January 30, 1995